







PAPERS  
RELATIVE TO  
THE DISEASE CALLED  
CHOLERA SPASMODICA

IN INDIA,

*NOW PREVAILING IN THE NORTH OF EUROPE.*

PRINTED BY AUTHORITY OF

THE LORDS OF HIS MAJESTY'S MOST HONOUR-  
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THE HISTORY OF THE

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*Board of Health, College of Physicians,  
August 12, 1831.*

SIR,

THE Board of Health has already submitted to his Majesty's Privy Council a code of regulations to be adopted in the event of the disease now prevailing in Russia being ascertained to have spread into his Majesty's dominions, and herewith transmits a history of it as it appeared in India and in Moscow, together with the modes of treatment adopted in the former country. From the security which has hitherto been obtained by quarantine, there is no immediate urgency for making public the rigid rules originally laid before the Privy Council by the Board ; but as the disease is believed to have pervaded nearly the whole of the Russian Empire, and its progress westward is unchecked, the Board requests permission of their Lordships to have printed copies of the Report now presented, together with such a portion of the rules and regulations formerly submitted to their Lordships as are herewith annexed, for the purpose of general information

respecting the nature of the pestilence, and pointing out the preliminary line of conduct best calculated to prevent its propagation in this country. The circulation of such information among medical practitioners is further deemed desirable, from an erroneous notion very prevalent of a resemblance between this disease and the common Cholera Morbus of this country, which almost invariably appears at this season of the year, and which, from the state of the weather during the present summer, is likely to occur with unusual violence.

I have the honour to be,

Sir,

Your obedient Servant,

EDWARD I. SEYMOUR, M.D.,  
Secretary.

*C. C. Greville, Esq., &c. &c.*

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## R E P O R T.

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THE Board of Health, in compliance with the Directions of the Lords of his Majesty's Most Honourable Privy Council, have examined the following gentlemen, formerly employed in different branches of the Medical Department in India, viz.—

Dr. DAUN,

Dr. ALEXANDER,

Dr. ASHBURNER,

Dr. BIRCH,

Mr. WYBROW,

Mr. BOYLE,

Mr. MEICLE,

respecting the disease called Cholera Spasmodica in that climate. From their evidence, and from the great body of information contained in the printed medical reports drawn up by order of the several governments of Bengal, Madras, and Bombay, the Board has formed a detailed account of the symptoms of the disease, and given a view of the great outlines of practice adopted in India.

To these are annexed a description of the same disease, as it appeared in Moscow, given by Dr. Keir, an English physician, long resident in that capital, and an extract from the joint report of Doctors Russell and Barry, employed by his Majesty's Government to in-

investigate the nature of the same dreadful malady now raging at St. Petersburg.

The Board refers medical practitioners to the reports above mentioned generally ; but as they are not accessible to many individuals, from the circumstance of their not having been published, it more particularly calls their attention to the statement drawn up by Sir Gilbert Blane, and inserted in Vol. XI. of the Transactions of the Medico-Chirurgical Society, the correctness of which has been verified to a Committee of the College of Physicians by Dr. Russell, formerly resident in Calcutta, during the prevalence of this disease ;—to the works of Mr. Annesley on the Diseases of India ;—to an Essay on the Cholera by Mr. George Hamilton Bell ;—to other works by gentlemen formerly practitioners in that country, which are now before the public ; and to the ‘History of the Epidemic Spasmodic Cholera of Russia,’ by Dr. Bisset Hawkins.

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*Description of the Disease.*

The attack of the disease in extreme cases is so sudden, that, from a state of apparent good health, or with the feeling only of trifling ailment, an individual sustains as rapid a loss of bodily power as if he were suddenly struck down, or placed under the immediate effects of some poison ; the countenance assuming a death-like appearance, the skin becoming cold, and giving to the hand (as expressed by some observers) the sensation of coldness and moisture which is perceived on touching a frog ; by others represented

as the coldness of the skin of a person already dead. The pulse is either feeble, intermitting, fluttering, or lost; a livid circle is observed round the eyelids; the eyes are sunk in their sockets; the tongue is cold, and either clean, or covered with a slight white fur; and in many instances even the breath is cold. In cases of this severity, the vomiting and purging characteristic of the disease do not commonly take place so early as in milder attacks, but seem to be delayed until the almost overpowered functions of the body make a slight effort at reaction. It is worthy of remark that, unless death takes place in these extreme cases within a few hours, some effort of the animal power is made to rally the constitution; and this point is insisted upon here, because it will direct the mind of practitioners to the particular moment when bleeding, and certain other parts of practice, recommended in the Indian reports, can be enforced in this country with probable success. Vomiting soon succeeds; first of some of the usual contents of the stomach, next of a turbid fluid like whey, white of egg, water-gruel, or rice-water; described perhaps more accurately as a serous fluid, containing flocculi of coagulated albumen. The lower bowels seem to let go their contents; what happens to be lodged in the rectum is passed more or less in its natural state; the next discharges are similar to those thrown up from the stomach, and are passed with violence, as if squirted from a syringe. The same similitude may be applied to the vomiting. Spasms, beginning at the toes and fingers, soon fol



low, and extend by degrees to the larger muscles of the legs and arms, and to those of the abdomen. These vary in intensity, but are sometimes so violent as to put on the appearance of tetanus.

In some severe cases the vomiting is slight, in others considerable, and the purging and vomiting precede each other without any known rule; but whichever may be the precursor, a severe burning heat is early felt at the præcordia; there is an invincible desire for cold liquids, particularly water; and, although the skin and tongue are cold to the touch, and the pulse nearly lost, or even imperceptible, the patient complains of intense heat, and has an almost insuperable aversion to any application of it to the skin. The spasms increase, sometimes spreading gradually, sometimes suddenly, to the abdomen, as high as the scrobiculus cordis. The next severe symptoms are, an intolerable sense of weight and constriction felt upon the chest, accompanied with anxious breathing, the spasms continuing at the same time; a leaden or bluish appearance of the countenance, the tongue, fingers, and toes assuming the same colour; the palms of the hands and soles of the feet becoming shrivelled; the fingers and toes giving the appearance of having been corrugated by long immersion in hot water. There is, throughout, a suppression of the secretion of urine, of the secretions of the mouth and nose; no bile is seen in the evacuations, and it may be generally observed, that all the functions employed in carrying on life are suspended, or alarmingly weak-

ened, except that of the brain, which appears, in these extreme cases, to suffer little, the intellectual powers usually remaining perfect to the last moment of existence. At length a calm succeeds, and death. The last period is commonly marked by a subsidence of the severe symptoms, without improvement of the pulse or return of natural heat; but occasionally terminates in convulsive spasm. Within an hour or two from the commencement of such a seizure, and sometimes sooner, the pulse is often not to be felt at the wrist, or in the temporal arteries. If it be discoverable, it will usually be found beating from eighty to a hundred strokes in a minute; this, however, is not invariable, the pulse being not unfrequently quicker. The powers of the constitution often yield to such an attack at the end of four hours, and seldom sustain it longer than eight.

We have described the symptoms of the extreme case, in the usual order of their occurrence; but it will be obvious, that in a disease which proceeds so quickly to a fatal termination, medical practitioners will seldom see their patient until the greater number of these symptoms have taken place.

In the less rapid and more ordinary form, sickness at the stomach, slight vomiting, or perhaps two or three loose evacuations of the bowels, which do not attract much attention, mark the commencement of the attack; a burning sense of heat soon felt at the præcordia excites suspicion of the disease; an increased purging and vomiting of the peculiar

liquid, immediately decides its presence, unless previously proved by the prostration of strength, and an expression of the countenance not often exhibited, except when death is to be expected within a few hours. The symptoms before described follow each other in similar, but slower succession: the spasms of the extremities increase with the vomiting and purging, and particularly in proportion to the constriction of the thorax; and this form of the disease, which creeps on at first insidiously, and is in its progress more slow, by giving a greater opportunity for assistance, is, if treated early, more tractable: but if neglected, equally fatal with the more sudden seizures. Such cases last from twelve to thirty-six hours.

The principal difference consists in the diffusion of the symptoms through a greater space of time; a misfortune, it is true, to the patient, if the disease prove ultimately fatal; but advantageous, by affording an interval for the natural powers of the constitution to rally themselves, and for the employment of the resources of medical art. But there is another remarkable distinction well worthy of attention. It has been observed before, that in the more rapid cases, the intellectual faculties suffer but little; and it may be added here, that the disturbance of them is not delirium, but rather a confusion and hesitation of mind resembling slight intoxication. In those of longer duration, if the individuals, either by the natural vigour of their constitution, or medical assistance, sustain the shock



beyond the period of twenty-four hours, suffusion of the *tunica conjunctiva* often takes place, not unfrequently delirium, and even coma.

It is remarked that those who survive seventy-two hours generally recover, but there are exceptions even to this: for though, according to the Reports of the Medical Practitioners in the Presidencies of Bombay and Madras, the recovery from this seizure commonly terminates the disease; or, as is stated in the latter, the sequelæ are those dependent upon some previous ailment of the individual; yet the Bengal Report details a series of subsequent symptoms resembling those of low nervous fever, which, when they proved fatal, usually terminated within eleven days from the commencement of the seizure called Cholera. To complete the outline, an account of these symptoms, extracted from the Bengal Report, will be given hereafter; and we may observe, that they correspond accurately with the description given by Dr. Keir of the second stage of the disease, as it appeared at Moscow from the beginning of the month of October to the earlier part of the month of March. But we will previously point out the manner in which the recovery from this seizure commonly takes place. The first symptoms are the abatement of the spasms and difficulty of breathing, a return of heat to the surface of the body, and a restoration of the pulse; these, however, are equivocal, from being often only temporary, and the prognostic from them is very uncertain unless they follow a progressive march of amend-

ment ; sleep and warm perspiration attending it are of more importance and more certain signs of recovery. The return of the secretion and evacuation of urine is reckoned one of the most favourable signs ; the next is the passage of bile by the bowels, and if this be freely established, and accompanied with an improvement of the pulse and of the temperature of the skin, the patient is soon placed in a state of security from the attack ; but it will appear from the following extract from the Bengal Report, that upon this recovery he has often a serious stage of disease to encounter, the description of which is given in the words of the author. Before, however, we proceed to this, we must remark that the seizure, when not fatal, has three modes of termination ; one in immediate convalescence, accompanied only with great weakness ;—a second, in which large evacuations of vitiated bile are passed for several days, sometimes attended with blood and with peculiar pains in the bowels, particularly in the rectum.—The third is of a febrile nature, of which the following account is supplied from the information given in the Bengal Report, viz.:—

‘ The fever which almost invariably attended this  
 ‘ second stage of the disease,\*\*\* partook much of the  
 ‘ nature of the common bilious attacks of these latitudes.  
 ‘ There was a hot, dry skin, a foul deeply-furred tongue,  
 ‘ parched mouth, thirst, sick stomach, restlessness, watch-  
 ‘ fulness, and quick variable pulse, sometimes with deli-  
 ‘ rium and stupor, and other marked affections of the  
 ‘ brain. Generally, when the disorder proved fatal in

‘ this stage, the tongue, from being cream-coloured, became brown, and sometimes black, hard, and more deeply furred ; the teeth and lips were covered with sordes, the state of the skin varied, chills alternating with heats, the pulse became extremely quick, weak, and tremulous, hiccough, catching of the breath, great restlessness and deep moaning succeeded, and the patient soon sunk incoherent and insensible under the debilitating effects of low nervous fever and frequent dark, tarry alvine discharges.’ It is to be observed that the able author of the Bengal Report doubts whether these symptoms can be considered as ‘ forming any integrant or necessary part of the disorder itself,’ or whether they belonged to the bilious seizures of the climate. A reference to the annexed account of the second stage of the disease at Moscow, during the coldest season of the year, will probably satisfy this doubt by proving that climate was unconcerned in producing them.

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*Appearances on Dissection.*

The appearances after death varied much in different individuals, and apparently according to the duration of the disease. In those who died within eight or ten hours, the stomach was generally found in a relaxed, dilated state, loaded with the same fluids as had been thrown up during life ; sometimes containing food which had been swallowed, and not returned although the vomiting had been excessive. The internal and peritoneal coats of the stomach were in these instances



pale and bloodless ; the small and great intestines bore the same appearance ; the arch of the colon when the spasms had reached the abdomen before death, and sometimes the sigmoid flexure of it, were so contracted as to be less in diameter than the duodenum. The former was most commonly observed, the latter only occasionally. No appearance of bile or fæces was found in the intestines. The bladder was generally empty. The liver, and vessels which pass to the vena cava inferior were turgid with blood ; this turgescence extended to the vena cava superior, to the right side of the heart, and in some instances to the left ventricle : blood was in the same manner stagnant in the lungs, marking a congestion in the whole venous circulation of the larger vessels : the blood in the vessels was unusually *black*, resembling tar in colour and consistence. It is worthy of remark, that this local accumulation of blood was uniformly found in all fatal cases, whether they were of rapid or slower termination, and was particularly evident, as might be expected, in those in which the oppression of the breathing had prevailed with most violence. The gall bladder was turgid with bile, the gall duct commonly pervious, but bearing no marks of bile having recently passed.

In cases of longer duration the same leading appearances were observed, but often with great addition. The vessels of the stomach in these instances were found loaded with blood, presenting a surface sometimes of a pale pink hue, sometimes of a deep blue, at others of so dark a tint as to resemble sphacelus of the membrane,

from which it could only be distinguished by the firmness of texture, and the appearance of vascular congestion on holding up the stomach between the eye and the light : in other instances the arteries of the stomach presented the appearance of having been penetrated by a vermillion injection ; the same was observed in the smaller intestines, very rarely in the larger. In those cases in which coma had existed, serum was found effused, sometimes between the membranes of the brain, sometimes into the ventricles, and in some there was merely congestion of the blood in the vessels. Those who died of the subsequent illness shewed no appearances after death different from such as are usually observed in other cases of febrile disease, attended with corresponding symptoms.

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### *Treatment of the Disease in India.*

The modes of treatment adopted in India were very various. From the rapid accumulation of patients daily falling down with the disease, and the small success of any treatment in the earlier appearance of it, a feeling of disappointment and almost despair seems at times to have dispirited the medical officers, and they are described, (from the hopeless state in which they found their patients,) as changing from one extreme of practice to another. Thus the strongest stimulants and bleeding were used in a disease of the duration of but a few hours, according to the instinctive view of the symptoms presented to each practitioner, sometimes

with, and sometimes without success; but from the vast body of evidence collected by their industry and zeal in India, and detailed by them with great ability, it is not difficult to form a rationale of their practice.

The first objects were to rally the animal powers by the application of heat, by internal and external stimuli, and to quiet the vomiting, purging, and spasms, by opium, or other sedatives; the next to restore the passage of bile, and the last to relieve the oppression of breathing. The difficulty of their position will be readily understood by calling to mind, that in extreme cases patients were seldom seen until all these symptoms were found existing together, with a pulse at the wrist either fluttering or not to be felt.

The measures pursued for these objects were by almost all practitioners, in the first instance, to administer opium, and as soon as the vomiting was abated, to give purgatives, of which calomel was commonly a principal ingredient; others relied upon calomel combined with opium, and subsequent purging, with the more ordinary laxative medicines. An opinion was entertained that calomel alone was the best sedative of the vomiting, and relieved the anguish occasioned by the burning heat at the præcordia; but the evidence in favour of this fact is met by so many contrary statements as to leave the question in great doubt. The doses of opium were in general sixty or eighty drops of laudanum, or an equivalent in solid opium, which was upon the whole found to be best retained upon the stomach. With this, ten, fifteen, or twenty grains,



and sometimes more, of calomel were given, and it may be generally observed, that the most common practice was to administer sixty drops of laudanum and twenty grains of calomel, which were repeated in larger or smaller doses once in two, three, or four hours, according to the judgment of the practitioner. Others, who had the greatest confidence in calomel, but felt, at the same time, the real or probable advantage of the sedative, combined five, ten, or twenty grains of calomel with one or more of opium. The purgatives generally used were jalap, scammony, rhubarb, the compound extract of colocynth, purgative pills of which croton oil was an ingredient, senna, salts, magnesia, and particularly castor oil. For the purpose of relieving the coldness of the surface of the body, and determining the blood to the skin, every kind of internal and external stimuli was immediately applied;—of the former, brandy and other spirits, æther, ammonia, oil of peppermint, were principally used; assafoetida was used by several, and this alone, or combined with opium, and sometimes opium alone, sometimes turpentine, were used in the form of glyster. It is proper to remark, that in evidence submitted to the Board, it is stated that cajeput oil, in the quantity of thirty to fifty drops, was administered by the servant of a resident in India to some of the natives, in the beginning of the disease, with beneficial effect. Of external stimuli, blistering plasters of cantharides were applied to the scrobiculus cordis; or, in cases of great depression of power, boiling water, so as to raise an immediate

blister ; nitric acid was also applied and neutralised by chalk, to prepare the skin for the application of the blistering plasters, and enable them to produce effect with more expedition ; sinapisms to the same place, to the feet, calves of the legs, and arms ; hot baths at the temperature of  $112^{\circ}$  of Fahrenheit's thermometer, vapour baths, fomentations, simple friction with warm flannels, bottles containing hot water, hot sand, friction with various liniments, with oil of turpentine, and cajeput oil, and such other stimuli as occurred to each practitioner, or were in his power, according to the emergency of the case. A milder practice was adopted by others, of giving magnesia in milk, to the amount of a drachm or more, every half hour or hour, with the intention of pacifying the vomiting, and acting upon the bowels by gentle means. Some considerable success which attended this practice induced, for a short time, a frequent repetition of it, but the subsequent failure of these means leaves upon the face of the Report a doubtful opinion of their efficacy. Of the milder modes of treatment, one not unfrequently adopted was to empty the stomach by infusion of chamomile and other light evacuants of that organ, afterwards to give opium, and purge either with calomel or without. Emetics were given by some practitioners, but not generally ; and there is some record in the Indian Reports and in the evidence before the Board of their utility.

Almost every plan seems to have had its success and its failure ; and we may observe again that, in most cases, if death did not take place within twenty-four hours, and that warmth returned to the skin, and the

circulation became considerably restored within that period of time, and the improvement, either by the natural powers of the constitution, or the assistance of medical art, was sufficient to protract the patient's life for seventy-two hours, he almost always recovered from the seizure. But the remedy which is described to have been most uniformly successful, when it could be used, is bleeding, and this even in cases when the pulse was scarcely perceptible at the wrist. This practice seemed to apply itself to the root of the disease, by relieving the congestion of the venous system, which was invariably found loaded on examination after death, and which congestion (though only an effect of the first impression made by the attack of disease upon the constitution) appeared to be the immediate cause of death. In the lighter cases, or in those of a severe nature which came under medical treatment before the pulse at the wrist was lost, or had become fluttering, bleeding was attended with the most decided advantage. The oppression of the chest, the burning heat of the præcordia, the spasms, the vomiting and purging, are stated in some instances to have ceased at once, in others on a repetition of the bleeding. In such as allowed a free extraction of blood, these effects very uniformly occurred ; but even in some, when the pulse was indistinct, bleeding was successful if it could be carried to the extent of eighteen, twenty-four, or thirty ounces ; the pulse rising in power, and becoming more distinguishable, in proportion to the flow of blood. If the pulse, in



this state of feebleness, was distinct enough to give to the finger the feeling of oppression, bleeding was almost always successful. The blood drawn was always black, whether procured from a vein or an artery, and flowed with great difficulty, commonly at first coming from the vein in drops, and gradually in a stream; but before it could be induced to flow with freedom, the patient often required the warm bath, friction, external and internal stimuli, to produce a sufficient quantity for his relief. If a small quantity only could be procured, the heart seemed to feel the loss without being relieved; the bulk of the blood actually circulating being reduced, while the great mass of it, congested in the inferior and superior vena cava, did not make its way to the heart.

The effect of bleeding was mechanical, and acted only as removing an obstruction to the passage of the blood from the distended venous system; and if not carried far enough to remove this impediment, and allow the large veins to empty themselves into the heart, such weakness was produced as is occasioned by the loss of blood in constitutions worn out by disease. This black blood was not inflamed. The quantity required for relief varied in different individuals; the best criteria of the proper time for desisting from bleeding, were the abatement of the spasms and oppression of the breath, the increased vigour of the pulse, the removal of the burning heat at the præcordia; but perhaps the most sure guide was the change of blood from a black to a more florid colour.

It is to be observed, that though sometimes bleeding was followed by immediate sleep, restoration of pulse and natural warmth, and a speedy solution of the disease, it appears never to have been solely relied upon, but to have been followed or accompanied more or less by the other plans of practice above mentioned.

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The Board of Health has drawn up the above statement for the purpose of diffusing more generally a knowledge of the symptoms of the disease as it appeared in India, and of the plans of treatment there adopted. This, together with the descriptions of the same disease as it prevailed in Moscow, and is raging at St. Petersburg, is deemed sufficient for general information.

With the history of the disease, the dissections, and mode of treatment in India and Russia before them, medical practitioners in this country will be prepared for its first appearance. So much knowledge and intelligence are diffused among them, that until more uniformly successful modes of practice are devised, the Board wishes to leave their minds unbiassed. At the same time, all communications from those by whom the disease may be seen will be received with great attention; and they are invited to give the result of their observations to the Board, the Members of which will be happy at all times to advise with their medical brethren on the subject.

In the name of the Board,

HENRY HALFORD, President.

EXTRACT from the '*Report on the Epidemic Disease called Cholera Morbus, which prevailed in the City of Moscow, and in other parts of Russia, in Autumn 1830, and Winter 1831.*'—Dr. KEIR.

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No physician who is acquainted with the able works which have been published on the epidemic of India, improperly called Cholera Morbus, and has had an opportunity of treating the Russian epidemic, can have any doubt of the identity of the two: the complaint has most certainly made its way somehow or other from Hindostan to Vologda.

The symptoms of the disease, as it appeared in Moscow, were the following:—

The mode of attack and the primary symptoms were not uniformly the same, though the difference in these respects was not great. It most commonly began by some feeling of general uneasiness, soon followed by an unusual sense of weight or oppression at the pit of the stomach, and uneasiness or pain in the fore part of the head, usually succeeded by giddiness, and sometimes with ringing in the ears; these were either accompanied with or soon followed by a feeling of general weakness, purging, nausea, and vomiting; if delay even of a few hours in the medical treatment had taken place, which with the lower classes unfortunately happened but too often, the physician either found the patient without pulse at the wrist, or so insignificant as to indicate a strong sedative impression already



made on the vital energy of the heart; the temperature of the surface of the body underwent a proportional, if not a greater diminution, compared with the defect of the circulation; the mechanical part of respiration seemed less deranged than might have been expected, but it was evidently imperfect; spasmodic contractions of the muscles in different parts of the body, and particularly in those of the toes, feet, legs, and forearms, sometimes of the thighs, rarely of the trunk, generally supervened, and the patient frequently complained much of pain from these spasms, and of thirst; the purging and vomiting became more frequent, the eyes lost their natural brilliancy, and were encircled with a dark-coloured ring, the features sunk, the general volume of the body was much diminished, the extremities frequently looked livid, the blood stagnating in the vessels, and the hands and feet shrivelled, the skin on the inside appearing as if it had been long macerated in water; a general coldness overspread the surface, particularly the extremities, and partial clammy sweat appeared on the forearms, breast, and face; anxiety, oppression at the chest, and restlessness came on; the tongue looked either pale or of a slightly blue tint, and was commonly covered with a thin coating of slimy mucus; to the finger it felt cold, and often communicated the sensation which one has on touching the back of a frog; in one case, when the bulb of Reaumur's thermometer had been kept for two minutes under the tongue, the mercury stood at  $25^{\circ}$ , and in another at  $20^{\circ}$  of heat, and I have no doubt that, in many cases, it must have descended lower; when things were in this state, hiccough sometimes came on and proved very troublesome; the respiration becoming

more deranged ; the patient died a few hours afterwards, without any signs of reaction having appeared. In other cases, the sick continued a long time in this state without pulse, and preserved their intellectual faculties till a short time before death.

In some cases the disease showed itself in the form of an ordinary diarrhœa, which hung about the patient perhaps for a few days, or seemed to be excited by some error in diet, or other less evident cause. If this was not attended to, it generally ended with the symptoms proper to the epidemic. Several of those employed in the temporary hospital for the treatment of the disease, who had not the epidemic in a decided manner, were affected with nausea, vomiting, and bilious diarrhœa.

In a third set of cases the disease put on a more formidable appearance from the first, and the patient looked as if he had been brought to the ground by a violent blow or a stroke of lightning, so great was the oppression of the vital powers. In such cases it was evident that the action of the vital organs, and particularly of the heart, had been paralysed at a very early period of the attack. Here all human aid was vain ; the patient frequently died before there was time to try any remedy.

When the purging and vomiting first appeared, the contents of the stomach and bowels were first thrown out, and afterwards the mucous secretions of these organs, sometimes slightly tinged with green-coloured bile ; these evacuations, however, were soon followed by vomiting and purging of a watery fluid, sometimes like whey, and at others like a thin decoction of rice or barley, occasionally containing a white flocculent-

looking matter; the evacuations frequently were without odour, but sometimes their odour was strong, and very particular.

In order to the better understanding of what follows, I shall borrow the language of Drs. Armstrong and Ayre, and consider the disease as consisting of three periods :—the first, oppression; the second, reaction; and the third, collapse.

The above description of the symptoms and modes of attack of the disease comprehends the first period, where neither nature nor art have been able to overcome the sedative effects induced on the vital powers by the action of the efficient cause; where, however, the operation of that cause has been less in a degree, or where the vital powers, aided by art, have been able to maintain a struggle against its fatal tendency, the violence of the symptoms gradually gives way, the purging and vomiting become less frequent, the pulse begins to be more distinctly perceived, the external heat gradually returns, the spasms of the extremities become less troublesome or cease entirely, the patient gets a little sleep, and is then perhaps able to take some light nourishment; this favourable change in the state of the patient comprehends the second period, that of reaction. A febrile state, more or less distinctly marked, now takes place, and lucky is the case where it is moderate, for such generally recover. The secretions which were suppressed in the first period now begin to reappear; a gentle perspiration sometimes takes place; urine is discharged frequently, more or less tinged with bile, and the stools chiefly consist of bile in a very vitiated state; now and then blood in considerable quantity, of a dark colour, or a bloody fluid, is



passed by stool for some days ; in a few cases, a bloody mucus, as in dysentery, is discharged ; and in some, a thick yellow or light-brown looking mucus, or yeasty matter, is passed. If, however, attention is paid to the due regulation of the digestive organs, and the patient, avoiding errors in diet, is otherwise careful, he commonly recovers. Much more frequently, however, a second ordeal now begins, sometimes as severe, and frequently not less fatal, though more slowly so, than the first ; this is probably the effect of the morbid changes which have been induced during the first period of the disease. The appearance of the complaint is now entirely changed, insomuch that one who had not seen the patient during the first period, or been told of the symptoms, could not possibly know that he was suffering from the epidemic. I have observed the disease in this, its second period, to assume four forms : the first, an inflammatory, or rather sub-inflammatory state of the stomach and bowels, most frequently the latter, sometimes conjoined ; the second, inflammatory irritation of the lungs, with pain of the chest, cough, viscid expectoration, and fever, appearing as a critical metastasis of the disease ; the third, bilious or bilio-nervous fever, with suppuration of the parotid glands ; in one case, with axillary suppurating bubo, towards the end of the fever, and inflammatory irritation of the lungs took place, ending in vomica ; and the fourth, a congestive sub-inflammatory state of the brain and spinal chord : this last, as was natural to expect from the nature and seat of the affection, proved by far the most dangerous and most frequently fatal form of the second period ; it appeared generally to supervene after the purging, vomiting, and cramps

had been relieved, and the external heat in some degree restored, the patient complained of pain in the back, between the shoulder-blades, or in some other part of the spine; sometimes along its whole tract; he appeared sleepy to such a degree, that at first I was disposed to attribute this state, in part at least, to the effects of the opium given in the first period. But I was soon convinced that the cause of this symptom, and of another strongly characteristic of this form of the disease, namely, the filling of the vessels of the sclerotica with red blood, was a congestive, sub-inflammatory state of the brain and spinal chord. This striking symptom at first began to show itself in the inferior part of the globe of the eyes; it gradually increased, and little by little reached the upper part, while the eyes turned upwards, exposing the lower part gorged with blood. This state of the patient generally ended in a complete coma, and proved fatal a few hours afterwards.

It was singular and interesting to observe how long the patients would sometimes live without pulse at the wrist, and with other symptoms which showed the approach of death. I remember particularly conversing with one whose arms, breast, and face were covered with cold clammy sweat, the vessels of the eyes injected with blood, the pulse at the wrist had ceased for many hours, yet she answered questions readily and properly, though with a low whispering voice; a frequent symptom of the first and last periods of the disease: she died about six hours afterwards.

The more rapid and violent attacks of the disease were sometimes terminated by convulsions, and in a few cases where biliary and intestinal irritation had

prevailed, a cutaneous eruption, resembling the nettle-rash or the measles, but with a larger spot, appeared on different parts of the body, and continued a few days. The patients under my care, who were so affected, all recovered.

The duration of the disease was various, from a few hours to several days.

Where the efforts of nature and of art did not succeed, the second passed into the third period, which was marked by total collapse of the vital powers ; this frequently took place without the intervention of the second period.

The convalescence of the patients, excepting in those cases where the complaint was stopped by early bleeding, was slow ; and day after day copious evacuations of morbid bilious matter was discharged from the bowels, under the use of alterative doses of calomel.

I have seen no case where the patient was a second time affected by the disease, though I understand others have met with such cases: a relapse sometimes took place from errors in diet, and in one case proved fatal.

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#### *Appearances after Death.*

The appearances in the dead bodies were not uniform, and varied according to the duration of the disease and the circumstances under which the patient had died. As this was the case, I conceive the most satisfactory way by which I can answer the inquiry on this head will be to transmit the printed accounts of the dissections made at



Moscow, and presented to the Medical Council there, by its members who occupied themselves the most with this part of the duty; while I here add the impression made on my own mind by the dissections at which I was present.

The extremities in general were more or less livid and contracted, and the skin of the hands and feet corrugated, the features sunk and ghastly; on opening the skull, the blood-vessels of the brain and its membranes were more or less turgid with blood, particularly towards the base; the arachnoidea had sometimes in several places lost its transparency, and adhered to the pia mater; a fluid was sometimes found effused into the convolutions of the brain in some quantity, and more or less of serum in the lateral ventricles. The blood-vessels of the vertebral column and spinal chord more or less loaded with blood, which was sometimes effused between its arachnoid and dura mater; partial softening of the substance of the spinal chord was sometimes met with, and marks of inflammatory congestion in the larger nerves. The lungs were generally gorged with dark coloured blood, the cavities of the heart filled with the same, and frequently containing polypous concretions. In all the dissections I was present at, very dark coloured blood, which, when extended on a white surface, resembled the colour of the darkest cherry, was found in the arch of the aorta, and in other arteries.

The state of the abdominal organs varied considerably, the stomach and different parts of the intestines were frequently found to be partially, but considerably contracted; the internal surface of the stomach sometimes seemed to be little affected. A whitish or yellow fluid matter resembling the evacuations was frequently

found in different parts of the alimentary canal, which now and then contained a good deal of air. In either case, both stomach and intestines bore marks of congestion, and of a sub-inflammatory state, varying from dark-coloured spots of small extent, to several inches, affecting the whole internal circumference of the intestines. The colour of these parts also varied a good deal, from dark-coloured venous congestion, to rose-coloured inflammation. In one case the internal surface of the stomach was so strongly and so generally tinged of a very dark colour, that it might easily have been mistaken for gangrene. On exposing the stomach between the eye and the light, it was evident that there was neither gangrene, nor solution of continuity, but that the dark colour proceeded from a very general and great congestion of very dark-coloured blood in the vessels of the organ. The subject of this case, I was told, had died with symptoms of a typhoid nature, after suffering from the usual symptoms of the epidemic. Excepting in this case, which was evidently one of congestion, and not of inflammation, I saw nothing in the morbid appearances from which a conclusion could be drawn, that inflammation was a very general morbid change in the alimentary canal, or a common cause of death: however, by its presence in the second period of the disease, it might add to the general irritation, or, even as a consequence of preceding congestion, be itself occasionally the cause of the fatal event. Both stomach and bowels were frequently of a paler colour than natural, both on the outer and inner surface; but neither thickening nor condensation from inflammation, nor exulceration, destruction of substance, nor abscess, appeared in any of the dissections. I was present at.

The liver was generally pretty full of dark-coloured blood, the gall-bladder frequently much distended with tenacious ropy bile, of a dark yellow or green colour; the gall-ducts sometimes contracted, at other times not; the appearance of the pancreas, spleen, and kidneys was various, frequently differing but little from their natural state, in other cases rather surcharged with blood, the urinary bladder almost always collapsed and empty, the uterus generally natural.

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*Extract from the joint Report of Drs. Russell and Barry.*

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*St. Petersburg,  $\frac{27}{15}$  July, 1831.*

SIR,

ALTHOUGH there can be no doubt that the disease now prevailing here is strictly identical, in all essential points, with the Epidemic Cholera of India; and although there are many descriptions extant of that malady, much more ably and accurately drawn up than any which we can pretend to give; yet we are induced to believe that a short account of the symptoms which we ourselves have actually witnessed and noted at the bedside in some hundreds of cases, since our arrival here, may be useful,—first, because we are not aware that any description by an eye-witness of European Cholera has yet been addressed to the British Government; secondly, because the disease, as it has shown itself in this capital, when closely compared with the Indian Cholera, appears to have undergone some modifications; thirdly, because, having now studied the disease in all its stages, our description, however imperfect, will at least assist towards establishing a standard of comparison with other local epidemics of Cholera in Europe, and may, perhaps, enable those who have not seen this disease, to recognise it with more certainty than they would otherwise be able to do.

The Cholera Morbus of the North of Europe, to which the Russian peasants have given the name of ‘Chornaia Colezn,’ or *black illness*, like most other dis-

eases, is accompanied by a set of symptoms which may be termed preliminary; by another set which strongly mark the disease in its first, cold, or collapse stage; and by a third set, which characterise the second stage, that of reaction, heat, and fever.

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### *Preliminary Symptoms.*

We have but few opportunities of witnessing the presence of all these symptoms, some of which precede the complete seizure by so short an interval, that the utmost diligence is scarcely sufficient to bring the patient and the physician together, after their occurrence, before the disease is fully formed. Diarrhœa, at first feculent, with slight cramps in the legs, nausea, pain, or heat about the pit of the stomach, malaise, give the longest warning. Indeed, purging, or ordinary diarrhœa, has been frequently known to continue for one, two, or more days, unaccompanied by any other remarkable symptom, until the patient is suddenly struck blue, and nearly lifeless. Often the symptoms just mentioned are arrested by timely judicious treatment, and the disease completely averted. When violent vertigo, sick stomach, nervous agitation, intermittent, slow, or small pulse, cramps, beginning at the tips of the fingers and toes, and rapidly approaching the trunk, give the first warning; then there is scarcely an interval. Vomiting or purging, or both these evacuations, of a liquid like rice-water or whey, or barley-water, come on; the features become sharp and contracted, the eye sinks, the look is expressive of terror, wildness, and, as it were, a

consciousness on the part of the sufferer that the hand of death is upon him. The lips, the face, the neck, the hands, the feet, and soon the thighs, arms, and whole surface, assume a leaden, blue, purple, black, or deep brown tint, according to the complexion of the individual, varying in shade with the intensity of the attack. The fingers and toes are reduced at least a third in thickness; the skin and soft parts covering them are wrinkled, shrivelled, and folded; the nails put on a bluish pearl-white; the larger superficial veins are marked by flat lines of a deeper black; the pulse is either small as a thread, and scarcely vibrating, or else totally extinct. The skin is deadly cold, and often damp; the tongue *always moist*, often white and loaded, but flabby and chilled, like a bit of dead flesh. The voice is nearly gone; the respiration quick, irregular, and imperfectly performed. Inspiration appears to be effected by an immense effort of the chest, whilst the alæ nasi (in the most hopeless cases, and towards their close), instead of expanding, collapse, and stop the ingress of the air. Expiration is quick and convulsive. The patient asks only for water, speaks in a plaintive whisper (the ‘*vox cholericæ*’), and only by a word at a time, from not being able to retain air enough in his lungs for a sentence. He tosses incessantly from side to side, and complains of intolerable weight and anguish around his heart. He struggles for breath, and often lays his hand on his stomach and chest to point out the seat of his agony. The integuments of the belly are sometimes raised into high irregular folds, whilst the belly itself is violently drawn in, the diaphragm upwards and inwards towards the chest; sometimes there are tetanic spasms of the



legs, thighs, and loins ; but we have not seen general tetanus, nor even trismus. There is occasionally a low, suffering whine. The secretion of urine is always totally suspended, nor have we observed tears shed under these circumstances ; vomiting and purging, which are far from being the most important or dangerous symptoms, and which, in a very great number of cases of the present epidemic have not been profuse, generally cease, or are arrested by medicine easily in the attack. Frictions remove the blue colour for a time from the part rubbed ; but in other parts, particularly the face, the livor becomes every moment more intense and more general. The lips and cheeks sometimes puff out and flap, in expiration, with a white froth between them, as in apoplexy. If blood be obtained in this state, it is black, flows by drops, is thick, and feels to the finger colder than natural. Towards the close of this scene, the respiration becomes very slow, there is a quivering among the tendons of the wrist, the mind remains entire. The patient is first unable to swallow, then becomes insensible ; there never is, however, any rattle in the throat, and he dies quietly after a long, convulsive sob or two.

The above is a faint description of the very worst kind of case, dying, in the cold stage, in from six to twenty-four hours after the setting in of the bad symptoms. We have seen many such cases just carried to the hospital from their homes or their barracks. In by far the greater number vomiting had ceased, in some, however, it was still going on, and invariably of the true serous kind. Many confessed that they had concealed a diarrhœa for a day or two ; others had been suddenly seized, generally very early in the morning.

From the aggravated state which we have just described, but very few indeed recover, particularly if that state has been present even *for four hours* before treatment has commenced. A thread of pulse, however small, is almost always felt at the wrist, where recovery from the blue or cold stage is to be expected. Singular enough to say, hiccough coming on in the intermediate moments, between the threatening of death and the beginning of reaction, is a favourable sign, and generally announces the return of circulation.

In less severe cases, the pulse is not wholly extinguished, though much reduced in volume ; the respiration is less embarrassed ; the oppression and anguish at the chest are not so overwhelming, although vomiting and purging and the cramps may have been more intense. The coldness and change of colour of the surface, the peculiar alteration of the voice, a greater or less degree of coldness of the tongue, the character of the liquids evacuated, have been invariably well marked in all the degrees of violence of attack which we have hitherto witnessed in this epidemic. In no case or stage of this disease have we observed shivering ; nor have we heard, after inquiry, of more than one case, in which this febrile symptom took place.

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### *Fever or Hot Stage.*

After the blue cold period has lasted from twelve to twenty-four, seldom to forty-eight hours or upwards, the pulse and external heat begin gradually to return, head-ache is complained of, with noise in the ears, the

tongue becomes more loaded, redder at the tip and edges, and also drier. High-coloured urine is passed with pain and in small quantities, the pupil is often dilated, soreness is felt on pressure over the liver, stomach, and belly, bleeding by the lancet or leeches is required. Ice to the head gives great relief. In short, the patient is now labouring under a continued fever not to be distinguished from ordinary fever. A profuse critical perspiration may come on, from the second or third day, and leave the sufferer convalescent; but, much more frequently, the quickness of pulse and heat of skin continue, the tongue becomes brown and parched, the eyes are suffused and drowsy, there is a dull flush with stupor and heaviness about the countenance, much resembling typhus, dark sordes collect about the lips and teeth, sometimes the patient is pale, squalid, and low, with the pulse and heat below natural, but with the typhous stupor, delirium supervenes, and death takes place from the fourth to the eighth day, or even later, in the very individual, too, whom the most assiduous attention had barely saved in the first or cold stage. To give a notion of the importance and danger of cholera fever, a most intelligent physician, Dr. Reimer, of the merchant hospital, informs us, that of twenty cases treated under his own eye, who fell victims to the disease, seven died in the cold stage, and thirteen in the consecutive fever.

The singular malady is only cognizable *with certainty* during its blue or cold period. After reaction has been established, it cannot be distinguished from an ordinary continued fever, except by the shortness and fatality of its course. The greenish or dark, and highly bilious discharges produced in the hot stage, by calomel,



are not sufficiently diagnostic, and it is curious that the persons employed about these typhoid cases, when they are attacked, are never seized with ordinary fever, but with a genuine cold, blue cholera; nothing, therefore, is more certain, than that persons may come to the coast of England, apparently labouring under common feverish indisposition, who really and truly are suffering under cholera in the second stage.

The points of difference between the present epidemic and the cholera of India, when the two diseases are closely compared, appear to us to be the following :—

First, The evacuations, both upwards and downwards, seem to have been much more profuse and ungovernable in the Indian than in the present cholera, though the characters of the evacuations are precisely the same.

Secondly, Restoration to health from the cold stage, without passing through consecutive fever of any kind, was by far more frequent in India than here, nor did the consecutive fever there assume a typhoid type.

Thirdly, The proportion of deaths in the cold stage, compared with those in the hot, was far greater in India, according to Dr. Russell's experience, than here.

Fourthly, The number of medical men and hospital attendants attacked with cholera during the present epidemic, in proportion to the whole employed and to the other classes of society, has been beyond all comparison greater here than in India under similar circumstances; twenty-five medical men have been already seized, and nine have died out of two hundred and sixty-four. Four others have died at Cronstadt, out of a very small number residing in that fortress at the time the disease broke out there. Six attendants have been taken

ill at a small temporary hospital behind the Aboucoff since we wrote last. It is certain, however, that in some cholera hospitals, favourably circumstanced as to size, ventilation, and space, very few of the attendants have suffered.

Of these facts we are likely to receive accurate statements in answer to the written questions which we have submitted to the medical authorities through the Government here.

Convalescence from Cholera has been rapid and perfect here, as is proved by the following fact. The Minister of the Interior had given orders that all convalescents, civil as well as military, at the General Hospital, should be detained fourteen days. We inspected about two hundred of these détenus some days back, with Sir James Wylie, and found them in excellent health, without a single morbid sequela amongst them.

Relapses are rare in this epidemic, nor have they been often attended with fatal results: hospital servants seem to have been most liable to them. One physician had three attacks, the second severe, in which he states that he derived great benefit from the *Magisterium bismuthi*.

In our next we shall resume the medical history of the disease, and

Have, &c.,  
(Signed) WILLIAM RUSSELL, M.D.  
D. BARRY, M.D.

*C. C. Greville, Esq., &c. &c.*

Attacked from 13th to 14th (O.S.) in 24 hours . . . .	99
Deaths ditto . . . . .	108
Cured ditto. . . . .	164

*Preliminary steps advised to be taken on the first  
appearance of the Disease.*

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It is of great importance that each town or village, particularly those on the coast, should be prepared with the best-arranged means to meet such a calamity as the breaking out of the disease now raging in the North of Europe, so as to prevent confusion upon the emergency of the moment, and be ready to act upon a well-considered system for preventing the spreading of infection.

With this view, the Board recommends the formation of a local Board of Health at each place, to consist of the chief magistrate, the clergyman, one or more medical gentlemen, and two or three of the principal inhabitants, who may immediately, and as occasion requires, correspond with the Board of Health in London, the medical members of the local Boards being deputed to write upon all subjects relating to any symptoms of the disease.

The best means of preventing the spreading of infection are, the immediate separation of the uninfected from the sick, by their prompt removal from the house of any infected person, or by the removal of any individual affected with the disease, if possible, to some house in a dry and airy situation, appropriated to the purpose ; but in the event of such removal not being practicable, on account of extreme illness or otherwise, the prevention of all intercourse with the sick, even of the family of the person attacked, must be rigidly ob-



served, unless the individuals who desire to stay shall submit to such strict rules of quarantine as the public safety may demand, and the local Board of Health, advising with the Board of Health in London, may consider expedient.

As success in the treatment of this disease, and preventing its spreading, has been found greatly to depend upon *early* medical assistance, it is of great importance that the heads of families and others should be vigilant in guarding against concealment or delay in making known every case which may occur.

On the removal of diseased persons, the rooms they may have inhabited, and the house generally, should be thoroughly exposed to a constant current of air, and recourse had to all the well-known means of purifying houses, particularly the use of chloride of lime; and the bedding and clothing of the sick person, after removal, should be soaked in a slight solution of the chloride in water, and well washed. It is impossible that ventilation and cleanliness can be carried too far in the houses of the sick after removal; whitewashing, and a variety of means of effecting so important an object, will no doubt occur to the local Boards of Health; and a continuance of ventilation for some days as the best means of preventing contagion.

In large towns the local Board of Health should be composed of sufficient numbers to admit of sub-division into district committees, always attaching to each Committee at least one medical gentleman.

For the information of the public, and to secure a ready and instant reference to authorized persons, the names and residence of the persons composing the local Boards of Health should be placed on the Church door.

In the event of so great a calamity falling upon this country as the introduction of this disease, rules and regulations upon an extensive scale, suited to the rigid system of quarantine which such an event would demand, will be immediately circulated by the Lords of his Majesty's Most Honourable Privy Council, who will, upon the earliest intimation of the existence of the disease, send down a medical practitioner, who has been acquainted with the disease as it occurred in India.

In the name of the Board,

HENRY HALFORD, President.

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